United States Department of Agriculture

NRCS Natural Resources Conservation Service

Colorado Enhancement Activity Job Sheet E-5

Name:

Ninety Percent (90%) Use of Manure and or Legumes / Green Leaf Manure to Supply Crop Nutrient Needs

Payment = $1.10 / Acre / Year to apply manure and or plant legumes to supply 90 percent of crop nutrient needs. The payment applies only to those acres receiving manure and or those acres planted to a legume.

Livestock manure and legumes (or other green manures) are excellent fertilizer for the soil, providing such nutrients as nitrogen, phosphorus, calcium, magnesium, micronutrients, potassium, and organic matter. Adding alternative fertilizers to inorganic compounds will benefit the soil's water holding capacity and tilth. Additionally, this approach can reduce the consumption of fossil fuels and minerals used in the production of inorganic fertilizer, conserving energy in the process. However, when using these alternative sources, it is still essential to follow good management practices in order to avoid damage to the crop and hazards to the environment.

Manure - Animal waste is an excellent source for nutrients; however, manure nutrient content varies among operations and over time. Manure applications should be based strictly on the nutrient requirement of the crop to avoid over-application and reduce the potential of nitrate-nitrogen leaching into groundwater and phosphorus being transported into streams. The following steps will assure the correct amount (agronomic rate) of manure is applied:

1. Determine crop nutrient requirements based on a realistic yield goal
2. Determine the nutrient content of the manure
3. Determine the fraction of manure nutrients available to the crop in the first year of application
4. Calculate the application rate to supply crop nutrient needs
5. Deduct nutrients supplied from other sources
6. Determine supplemental nutrients needed for optimum crop growth

Legumes and Green Leaf Manures - Legumes and green leaf manures can perform a multitude of functions on the farm. Nutrients absorbed by green manure crops or those retained within crop residues after harvest, are gradually released or "mineralized" when the crop is incorporated into the soil and subsequently decomposes. Many factors govern when the nutrients will be released including the carbon/nitrogen ratio, moisture content, particle size of the soil, method of incorporation, soil nitrogen levels, and temperature. Legumes and green manures, like animal-based manure, can reduce the consumption of fossil fuels as inputs needed to produce inorganic fertilizers.

Legumes are the most important of the green manures. There are several categories of legumes and green manures that are used in conservation farming.

- **Cover crops** - Cover crops form mulch that protects the soil from wind and water erosion and greatly reduce annual weeds in the next growing season. Examples of

annual legumes include red and sweet clover, hairy vetch, winter cereals and buckwheat.

- **Catch crops / nutrient conserving crops** - A catch crop only grows briefly and is either worked in after the main crop has been harvested or planted between two main crops. The catch crop protects the soil from erosion and minimizes nutrient loss from the soil through leaching. It can also enrich the soil by adding organic matter, nitrogen, or other nutrients. Examples of annual legumes used as catch crops are oilradish, red clover and buckwheat.
- **Smother crops** - A smother crop is a green manure crop is grown primarily to control weeds. It is characterized by extremely dense, vigorous, and rapid growth. Smother crop species are usually selected with specific weeds in mind.

For more information on acceptable cover crops and green leaf manures, see Conservation Practice Standard and Specification 340, Cover Crop.

Documentation Required: Farmer or crop consultant certification of appropriate manure application and or planting of legumes. Use the following Table for documentation. An example is provided to assist you.

Field Identifier	Acres	Crop Grown	Describe how nutrient needs are met
Ex. T123 Field 3	80	Winter Wheat	Green manure (field pea)/feedlot manure

I certify that I used manure and or legumes / green leaf manures to meet 90% of the nutrient needs of the crops grown on the field(s) listed in the table above.

Name: _____ **Date:** _____